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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,571	05/16/2005	Paul Frederick Fewster	5926P037	4561

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EXAMINER

YUN, JURIE

ART UNIT PAPER NUMBER

2882

DATE MAILED: 11/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/511,571	FEWSTER, PAUL FREDERICK	
	Examiner	Art Unit	
	Jurie Yun	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10 and 12-21 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The preliminary amendment filed 10/12/04 has been entered.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

3. Claim 14 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only and/or cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claim has not been further treated on the merits.

4. Claim 15 is objected to because of the following informalities: there is lack of antecedence for "the position sensitive X-ray detector". Appropriate correction is required.

5. Claim 17 is objected to because of the following informalities: there is lack of antecedence for "the position sensitive X-ray detector". Appropriate correction is required.

6. Claims 12, 13, 15-17, 20, and 21 are objected to because of the following informalities: "claims" should be "claim". Appropriate correction is required.

Drawings

7. Figures 1, 2, and 7 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action

Art Unit: 2882

to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

8. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. Claims 18-21 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims are directed to a judicial exception; as such, pursuant to the Interim Guidelines on Patent Eligible Subject Matter (MPEP 2106)), the claims must have either physical transformation and/or a useful, concrete and tangible result. The claims fail to include transformation from one physical state to another. Although the claims appear useful and concrete, there does not appear to be a tangible result claimed. Merely "measuring with the X-ray detector the X-rays diffracted by the sample to a range of angles in the range 80 degrees to 90 degrees to the normal to the plane " would not appear to be sufficient to constitute a tangible result, since the outcome of the measuring step has not been used in a disclosed practical application nor made available in such a manner that its usefulness in a disclosed practical application can be realized. As such, the subject matter of the claims is not patent eligible.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claim 17 is rejected under 35 U.S.C. 112, second paragraph, because it provides for the use of an X-ray apparatus according to claim 10 or 11, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 17 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 10 and 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noma et al. ('Surface-Sensitive X-ray Fluorescence and Diffraction Analysis with

Art Unit: 2882

Grazing-Exit Geometry' X-RAY SPECTROMETRY, vol. 28, 1999, pages 433-439) in view of Hayashi et al. (USPN 6,970,532 B2).

14. With respect to claim 10, Noma et al. disclose an X-ray apparatus for high-resolution X-ray diffraction of thin layers of single crystal, comprising: a sample stage (Fig. 8) holding a sample having a substantially crystal thin layer at a front face with the front face oriented substantially normally to a predetermined normal direction; a means for generating a collimated beam of X-rays at a predetermined target location on the sample stage at an angle of between 0 degrees and 60 degrees to the normal direction, the beam having an angular divergence at the sample stage in the range 0.01 degrees to 0.20 degrees; and an X-ray detector (position-sensitive proportional counter - PSPC) arranged laterally of the sample stage for detecting X-rays scattered by the sample to a predetermined range of angles to the normal direction, the angles in the predetermined range being in the range from 80 degrees to 90 degrees ("Grazing-Exit X-Ray Diffraction", pages 435-437). While Noma et al. disclose analysis of polycrystalline thin films, not a sample having a substantially single crystal thin layer, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the apparatus/technique to a sample having a substantially single crystal thin layer, by incorporating conventional measures like rotating the sample, increasing the wavelength range or divergence of the incident beam, etc. Noma et al. do not disclose the means for generating a collimated beam of X-rays comprises an X-ray source and a slit between the X-ray source and the sample stage. Hayashi et al. disclose this (column 9, lines 6-9). It would have been obvious to one of ordinary skill in the art at the

Art Unit: 2882

time the invention was made to use a slit between the X-ray source and the sample stage of Noma et al., to form a fine focus beam, as taught by Hayashi et al.

15. With respect to claim 12, Noma et al. disclose the X-ray detector has a linear resolution in the normal direction of less than 0.002 times the distance from the X-ray detector to the predetermined target location ("Grazing-Exit X-Ray Diffraction", pages 435-437).

16. With respect to claim 13, Noma et al. disclose the X-ray source has a dimension of no more than 0.2 mm in the direction normal to the beam in the plane containing the normal, the incident beam and the scattered X-rays ("Grazing-Exit X-Ray Diffraction", pages 435-437).

17. With respect to claim 14, Noma et al. disclose the X-ray detector (Fig. 8, PSPC) is an elongate X-ray detector extending in a direction parallel to the normal direction for detecting in parallel X-rays diffracted by the sample as a function of distance along the normal direction and hence over a predetermined range of angles to the normal direction ("Grazing-Exit X-Ray Diffraction", pages 435-437).

18. With respect to claim 15, Noma et al. do not specifically disclose the position sensitive X-ray detector (Fig. 8, PSPC) is a solid state detector. However, solid state detectors are well known in the art, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a solid state detector, to enable the digital information to be processed, manipulated, and stored easily.

19. With respect to claim 16, Noma et al. disclose the substantially crystal thin layer is a semiconductor layer ("Grazing-Exit X-Ray Diffraction", pages 435-437).

Art Unit: 2882

20. With respect to claim 17, Noma et al. disclose use of the X-ray apparatus to measure the sample, the sample being mounted on the sample stage and oriented to diffract the collimated X-ray beam onto the position sensitive X-ray detector ("Grazing-Exit X-Ray Diffraction", pages 435-437).

Allowable Subject Matter

21. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: Prior art fails to disclose an X-ray apparatus for high-resolution X-ray diffraction of thin layers of single crystal, wherein the means for generating a collimated beam does not include a monochromator.

22. Claims 18-21 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph and 35 U.S.C. 101, set forth in this Office action. The following is a statement of reasons for the indication of allowable subject matter: Prior art fails to disclose a method of high-resolution X-ray diffraction, comprising directing an incident collimated beam of x-rays created without a monochromator onto the sample at an angle of 0 degrees to 60 degrees to the normal to the plane, and measuring with the X-ray detector the X-rays diffracted by the sample to a range of angles in the range 80 degrees to 90 degrees to the normal to the plane, as claimed in claim 18. Claims 19-21 are allowable due to their dependency on claim 18. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

Art Unit: 2882

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

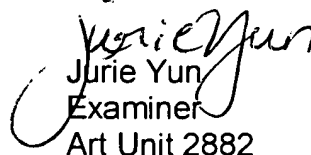
Conclusion

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jurie Yun whose telephone number is 571 272-2497.

The examiner can normally be reached on Monday-Friday 8:30-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 571 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Jurie Yun
Examiner
Art Unit 2882

November 1, 2006